REMARKS

Claims 1-15 and 45-64 are pending. Applicants note with appreciation that Claims 8, 9 and 62 are allowable.

The Amendments

In the specification, Preparation 2, and Examples 1-3 are amended to present tense because they are prophetic examples, and are not working examples.

The amendments made in the claims are for clarity and proper antecedent basis.

No new matter is introduced in any of the amendments.

35 U.S.C. §102 (b) Rejection

Claims 1-5, 10, 12-15, 45, 46-59 and 64 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Loxley et al (US Patent No. 6,262,833). Applicants respectfully disagree with the position taken by the Examiner because the focus of Loxely et al is capsules containing two different fluids, one is a dye-containing fluid (which may also contain particles) and the other is a particle-containing fluid (see column 5, line 44 to column 7, line 21, Tables 1 and 2, and Figures 1, 2 and 4-7). The two fluids are immiscible and separated by a boundary (8).

The capsule system of Loxley et al. is very different from the capsule system of the present Claim 1. The most significant differences are:

1. **Loxley's capsules do not contain a halogenated polymeric shell.**

Loxley discloses capsules containing an urea/formaldehyde copolymer shell **(see column 21, lines 11-13)**. Loxley does not disclose a halogenated polymeric shell as claimed in the present invention.

2. **Loxley's capsules are not non-aqueous electrophoretic capsules.**

Contrary to the Examiner's comment, the capsules of Loxley et al are not non-aqueous electrophoretic capsules. In this regard, the Examiner's attention is directed to column 9, lines 49-57, column 21, lines 6-65 and Figure 3A. In column 21, it is stated:

An encapsulation technique that is suited to the present invention involves a polymerization between urea and formaldehyde in an aqueous phase of an oil/water emulsion in the presence of a negatively charged, carboxyl-substituted, linear hydrocarbon polyelectrolyte material. The resulting capsule wall is a urea/formaldehyde copolymer, which discretely encloses the internal phase. The capsule is clear, mechanically strong, and has good resistivity properties.

The related technique of in situ polymerization utilizes an oil/water emulsion, which is formed by dispersing the electrophoretic composition (i.e., the dielectric liquid containing a suspension of the pigment particles) in an aqueous environment. The monomers polymerize to form a polymer with higher affinity for the internal phase than for the aqueous phase, thus condensing around the emulsified oily droplets. In one useful in situ polymerization processes, urea and formaldehyde condense in the presence of poly(acrylic acid) (See, e.g., U.S. Pat. No. 4,001,140). In other useful process, described in U.S. Pat. No. 4,273,672, any of a variety of cross-linking agents borne in aqueous solution is deposited around microscopic oil droplets. Such cross-linking agents include aldehydes, especially formaldehyde, glyoxal, or glutaraldehyde; alum; zirconium salts; and poly isocyanates.

The coacervation approach also utilizes an oil/water emulsion. One or more colloids are coacervated (i.e., agglomerated) out of the aqueous phase and deposited as shells around the oily droplets through control of temperature, pH and/or relative concentrations, thereby creating the microcapsule. Materials suitable for coacervation include gelatins and gum arabic. See, e.g., U.S. Pat. No. 2,800,457.

The interfacial polymerization approach relies on the presence of an oil-soluble monomer in the electrophoretic composition, which once again is present as an emulsion in an aqueous phase. The monomers in the minute hydrophobic droplets react with a monomer introduced into the aqueous phase, polymerizing at the interface between the droplets and the surrounding aqueous medium and forming shells around the droplets. Although the resulting walls are relatively thin and may be permeable, this process does not require the elevated temperatures characteristic of some other processes, and therefore affords greater flexibility in terms of choosing the dielectric liquid.

FIG. 3A illustrates an exemplary apparatus and environment for performing emulsion-based encapsulation. An oil/water emulsion, is prepared in a vessel 76 equipped with a device 78 for monitoring and a device 80 for controlling the temperature. A pH monitor 82 may also be included. An impeller 84 maintains agitation throughout the encapsulation process, and in combination with emulsifiers, can be used

> to control the size of the emulsion droplets 86 that will lead to the finished capsules. The aqueous continuous phase 88 may contain, for example, a prepolymer and various system modifiers.

The non-aqueous electrophoretic capsules of the present invention have a halogenated polymeric shell and the shell is formed by an interfacial reaction between halogenated monomers or oligomers in a dilectric solvent from the internal phase with a reactant complementary to the halogenated monomers or oligomers in an organic solvent from the external phase. No aqueous medium is involved in the encapsulation process of the present invention, thus the electrophoretic capsules formed are non-aqueous electrophoretic capsules.

Because Loxley does not teach the non-aqueous capsules of the present invention, the 35 U.S.C. 102(b) rejection of Claims 1-5, 10, 12-15, 45, 46-59 and 64 over Loxley should be withdrawn.

35 U.S.C. §103 (a) Rejection

(a) Claims 6, 7, 60 and 61 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Loxley et al in view of Rao et al (US Patent No. 6,372,838). The rejection is traversed.

As discussed above, the primary reference Loxley does not teach or suggest the non-aqueous capsules of the present invention. The addition of Rao et al does not cure the deficiency.

The subject matter of Rao et al is different from the present invention in many aspects. First of all, Rao et al relates to latex particles formed in a fluorinated solvent. The latex particles are formed in two steps. The first step involves polymerizing a mixture of 1-2 parts by weight of one or more non-fluorinated free-radically-polymerizable monomers and 1-9 parts by weight of one or more highly fluorinated macromers terminated at one or more sites with free-radically-polymerizable groups to form a dispersion of seed particles and the second step involves polymerizing the seed particles formed in the first step with additional one or more non-fluorinated free-radically-polymerizable monomers. The latex particles formed in the fluorinated solvent may function as an electrophoretic composition. However, Rao et al discloses that the latex composition is directly held between two electrodes in an electrophoretic display (see column 6, lines 12-24). Rao et al does not disclose or in any way suggest that the latex

composition be encapsulated in electrophoretic capsules, let alone non-aqueous electrophoretic capsules comprising a halogenated polymeric shell.

Therefore, Rao et al does not add anything to Loxley et al which would render the present invention obvious.

(b) Claims 11 and 63 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Loxley et al in view of Jacobson et al (US Patent No. 6,323,989). The rejection is traversed.

As discussed above, the primary reference Loxley does not teach or suggest the non-aqueous capsules of the present invention. The addition of Jacobson et al does not cure the deficiency.

Jacobson discloses a nanoparticle-containing electrophoretic fluid which may be encapsulated in capsules. According to Jacobson et al, the capsules may be formed by any conventional encapsulation technique (see column 19, lines 49-50). The nanoparticle-containing electrophoretic fluid may also be directly dispersed or emulsified into a binder (or a precursor to a binder material) (see column 20, lines 24-33). The reference does not disclose or in any way suggest non-aqueous electrophoretic capsules having a halogenated polymeric shell or how such capsules may be prepared.

Therefore Jacobson et al does not add anything to Loxley et al which would render the present invention obvious.

CONCLUSION

Applicants believe that the application is now in good and proper condition for allowance. Early notification of allowance is earnestly solicited.

Respectfully submitted,

Date: February 1, 2005

Viola T. Kung (Reg. No. 41,131)

HOWREY SIMON ARNOLD & WHITE, LLP
2941 Fairview Park Drive, Box 7
Falls Church, VA 22042
Ph. (650) 463-8181
Fax (650) 463-8400